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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,696	07/10/2006	Stephen William Murray	7101P010	2231

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EXAMINER
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DAGER, JONATHAN M

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3663

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/564,696	<b>Applicant(s)</b> MURRAY, STEPHEN WILLIAM	
	<b>Examiner</b> JONATHAN M. DAGER	<b>Art Unit</b> 3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 January 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10 January 2006</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 101***

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO “Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility” (Official Gazette notice of 22 November 2005), Annex IV(c), reads as follows::

Claims that recite nothing but the physical characteristics of a form of energy, such as a frequency, voltage, or the strength of a magnetic field, define energy or magnetism, per se, and as such are nonstatutory natural phenomena. O'Reilly, 56 U.S. (15 How.) at 112-14. Moreover, it does not appear that a claim reciting a signal encoded with functional descriptive material falls within any of the categories of patentable subject matter set forth in Sec. 101.

... a signal does not fall within one of the four statutory classes of Sec. 101.

... signal claims are ineligible for patent protection because they do not fall within any of the four statutory classes of Sec. 101.

Claims 1-4 and 7-10 all define a signal with descriptive material. While “vehicle acceleration” may be claimed as a statutory product when embodied on a tangible computer readable medium, a signal embodying that same functional descriptive material is neither a process nor a product (i.e., a tangible “thing”) and therefore does not fall within one of the four statutory classes of § 101. Rather, “an output signal representing vehicle acceleration” is a form of energy, in the absence of any physical structure or tangible material.

Thus, the claims above as written are not limited to statutory embodiments.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 4 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claim 4, the method wherein the "...net driving force is obtained by subtracting vehicle braking force applied through driven vehicle wheels..." cannot be found in the specification.

Claim 7 is rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. Critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976).

Regarding claim 7, it cannot be reasonably ascertained from the disclosure how exactly "...high pass filtering is carried out by low pass filtering and adding the low pass filtered and unfiltered signals together."

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps would detail how exactly how a driving force signal is converted to an acceleration signal. The application accomplishes filtering via "conventional" means, see page 3, second paragraph. However, it is not known by this office the conventional filtering means that would convert force (e.g. measured in Newtons) into units of acceleration.

Claims 2-7 and 9-10 are rejected due to dependency and for reciting similar embodiments.

Claim 5 states that vehicle acceleration is obtained via an adaptive vehicle model and the net driving force on the vehicle.

However, claim 5 depends from claims 1 and 3, which both state that the net driving force is applied to the high pass filter to determine vehicle acceleration.

Claim 6 is rejected due to dependency on base claim 5, as well as similar embodiments.

Claim 7 contains the embodiment:

“...wherein high pass filtering is carried out by low pass filtering and adding the low pass filtered and unfiltered signals together.

It is not understood from the claim language how the combination of a low pass filtered signal with an unfiltered signal will yield high pass filtering.

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4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 7, 8, and 10 are rejected under 35 U.S.C. 102(b) as being Heckmann (US 6,349,255).

Regarding claims 1, 3, 7, 8, and 10, as best understood, Heckmann discloses a method and an apparatus for generating a driving status signal that represents the driving status of a motor vehicle. A wheel acceleration variable representing the acceleration of the vehicle wheels is formed. In addition, an acceleration variable representing the longitudinal acceleration of the vehicle is sensed by way of sensors. The wheel acceleration variable that is formed is low-pass filtered, and the acceleration variable that is sensed is high-pass filtered. The driving status signal is generated as a function of an association between the low-pass filtered wheel acceleration variable and the high-pass filtered acceleration variable. As a result, it possible to determine the vehicle's ground acceleration from a combination of the signals of an acceleration sensor and the wheel rotation speed signals (abstract).

Heckmann also discloses that In particular, provision is made for the driving status signal to be generated as a function of an additive association of the low-pass filtered wheel acceleration variable and the high-pass filtered acceleration variable. Filtration followed by addition of the two filtered signals, according to the present invention, makes it possible to generate a signal that correctly indicates the ground acceleration (column 1 lines 63-67, column 2 lines 1-2).

Thus, Heckmann provides for a method of determining acceleration of a vehicle, wherein two signals are filtered using high and low pass filters, and then summed to provide a signal indicative of vehicle acceleration. Further, the above citations clearly disclose that one unfiltered signal represents a directly measured vehicle acceleration, and the other unfiltered signal is based on the net driving force applied to the vehicle.

Regarding claim 2, as best understood, Heckmann discloses that the (wheel circumference) acceleration  $a_{\text{Rad}}$  of the vehicle wheels is calculated from the wheel rotation speed signals by differentiation over time (output signal of block 10). Signal  $a_{\text{Sen}}$  of acceleration sensor 11 is filtered in a high-pass filter 13 with time constant  $T$ , to yield high-pass-filtered signal  $HP(a_{\text{Sen}})$ .

Wheel acceleration signal  $a_{\text{Rad}}$ , which is based on the wheel rotation speeds, is filtered using a low-pass filter 12 with the same time constant  $T$ , to yield low-pass-filtered signal  $TP(a_{\text{Rad}})$  (column 2 lines 28-40).

Thus, prior to being low-pass filtered, the one acceleration signal is obtained via differentiation of the vehicle speed with respect to time.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

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such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heckmann, as applied to claim 3 above, and further in view of Kubota (US 2003/0158648).

Regarding claim 4, as best understood, Heckmann does disclose obtaining wheel acceleration, but does not explicitly disclose the exact manner in which the acceleration, or net driving force, is obtained.

Kubota teaches a method wherein controller 20 determines whether or not a driving wheel torque  $T_{sub.FOR}$  due to target driving/braking force  $F_{sub.OR}$  calculated at vehicle speed servo section 51 is greater than or equal to an absolute value of a total of a driving wheel torque  $T_{sub.EB}$  generated by the engine brake and a driving wheel torque  $T_{sub.RR}$  due to a running resistance. That is, the engine brake and the running resistance generate a negative torque for decelerating the vehicle, and therefore, by comparing the driving torque due to the target driving/braking force  $F_{sub.OR}$  and an absolute value of a total of the driving wheel torque due to the engine brake and the driving wheel torque due to the running resistance, it is determined whether the host vehicle is in an accelerating state (affirmative determination) or a decelerating state (negative determination). When the determination at step S103 is affirmative, that is, when the target driving/braking force  $F_{sub.OR}$  is greater than or equal to the total, the program proceeds to step S102. When the determination at step S103 is negative, the program proceeds to step S104 (para 0058).

Thus, Kubota teaches a method wherein the net force of a vehicle is calculated by combining vehicle braking and driving forces on the driven wheels of the vehicle.



All of the components and methods are known in the above prior art. The only difference is a combination of these elements into a single device.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the mathematical functions of Kubota onto the base algorithm of Heckmann, since both systems could be used in combination to produce the predictable result of mathematically computing the net driving force of a vehicle.

Combining prior art elements according to known methods to yield predictable results is a rationale to support a conclusion of obviousness. See MPEP 2143(a).

8. Claims 5, 6, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heckmann, as applied to claims 3 and 8 above, and further in view of Gustafsson (US 2004/0199300).

Regarding claims 5, 6, and 9, as best understood, Heckmann suggests, but does not explicitly disclose wherein a microprocessor handles the signals in digital form, and that an adaptive vehicle model is used to obtain an estimate of vehicle acceleration.

Gustafsson teaches a sensor system for combining first and second sensor signals, and generating a physical parameter values dependent on said sensor signals used in autocalibrating sensors improving the performance and quality of existing sensor signals and virtual sensors realizing new sensors by combining and integrating in adaptive filter models sensor signals representing same or different of physical parameters (abstract).

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Gustafson also teaches that in a vehicle sensory system, typically measurements would be carried out by sensors delivering a continuous or discrete sensor output signal which is sampled into a digital data processing system. The samples are collected in a per se known manner with a predetermined sampling frequency, thus giving rise to a corresponding number of observations in the shape of equations to process (para 0049).

Both inventions are drawn to interpreting vehicle sensory signals and providing an output indicative of vehicle physical parameters. All of the components and methods are known in the above prior art. The only difference is a combination of these elements into a single device.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Gustafson onto the invention of Heckmann, since both systems could be used in combination to produce the predictable results of applying sensory input into a digital processor, and utilizing an adaptive vehicle model to obtain a more accurate representation of the vehicle condition.

Combining prior art elements according to known methods to yield predictable results is a rationale to support a conclusion of obviousness. See MPEP 2143(a).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JONATHAN M. DAGER whose telephone number is (571)270-1332. The examiner can normally be reached on 0830-1800 (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JD

04 February 2009

/Jack W. Keith/

Supervisory Patent Examiner, Art Unit 3663